

ORGANIC CHEMISTRY LABORATORY II

(CHEM 118 - PBPM118) Summer 2021

Note that this course contract is subject to change with notice via Canvas website announcements and/or email notification

Instructor: Dr. Ron Davis, Jr.

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Course Website: <http://www.canvas.georgetown.edu>

Office: 103 Basic Science

Text: Required: CHEM118 Course Pack (sections available on the Canvas Website)

Recommended: McMurray, Organic Chemistry (Lecture Text, on reserve in 103 Basic Science)

Office Hours: 11:00am-12noon Friday

2:00pm – 3:00 pm Friday

or by appointment

Teaching Assistant

Name: _____

Contact: _____

Course Objectives:

By the end of this course, the student should be able to:

- understand and follow common safety practices when working in a synthetic organic chemistry laboratory
- identify and distinguish simple organic compounds by selecting, performing and interpreting the appropriate analytical technique (UV-vis, FT-IR, NMR and GCMS techniques)
- design and execute a simple protecting group synthesis strategy
- understand and use crude product analysis to determine thermodynamic parameters governing thermodynamically and kinetically controlled reactions
- design basic reaction setups which exploit LeChatelier's principle to maximize yields from various equilibrium reactions
- predict the major products of multistep reactions based upon stoichiometric ratios of reactants
- select and use an appropriate system for exclusion of various problematic atmospheric gasses from reaction setups
- generate professional quality reports on experimentation involving all of the above concepts

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Semester Schedule (Tue meetings in classroom, Wed-Fri meetings in lab)

	Day	Lab/Lecture	Procedure	Other
Week 1	Tues	- Introductory Lecture - Safety Discussion		
	Wed	- Identification of Organic Compounds Lecture - Protecting Group Chemistry Lecture		
	Thurs	Spectral Unknown Exercise (TA)	CHEM118-01	
	Fri	Williamson Ether Synthesis Experiment (TA)	CHEM118-02	
Week 2	Tues	- Thermodynamic vs Kinetic Reaction Control Lecture - Regiospecific Reactions Lecture		
	Wed	Diels Alder Reaction (TA)	CHEM118-03	Write-up 1 due Report 2 due
	Thurs	Electrophilic Aromatic Substitution Experiment (TA)	CHEM118-04	
	Fri	Weekly Review (Prof)	CHEM118-04	
Week 3	Tues	- Advanced Separation Techniques Lecture - Dealing with Reversible Reactions Lecture		
	Wed	Steam Distillation Experiment (TA)	CHEM118-05	Reports 3 & 4 due
	Thurs	Fischer Esterification/Saponification Experiment (TA)	CHEM118-06	
	Fri	Weekly Review (Prof)	CHEM118-06	
Week 4	Tues	- Stoichiometric Reaction Control Lecture - Atmosphere and Moisture Exclusion Lecture		
	Wed	Aldol Condensation Experiment (TA)	CHEM118-07	Reports 5 & 6 due
	Thurs	Grignard Reaction Experiment (TA)	CHEM118-08	
	Fri	Weekly Review (Prof)		
Week 5	Tues	Optional Review		
	Wed	Lab Check Out		Reports 7 & 8 due
	Thurs	Lab Final Exam		

Grading Scale:

Safety Quiz	2%
Pre-Lab Quizzes	16%
Spectral Unknown Assignment:	8%
7 Laboratory Reports:	56% (8% each)
Lab Final Exam:	18%
<hr/> Total Course Grade	<hr/> 100%

A tentative standard rubric of 90.0-80.0-70.0-60.0 will apply to the grades

+/- cutoffs will be determined at the end of the term, but will not exceed +/- 3.0%

Blackboard website Grade Book calculations will be considered official

Rounding of final scores will be done at the discretion of the instructor

Please note that grades in this course are *earned*, not *negotiated*.

Although good-faith discussion of your report marks with your TA is encouraged, only legitimate calculation and transcription errors will be corrected in the grade book.